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Implementation of Distance Support (DS) to Reduce Total Ownership Cost (R-TOC)

ABSTRACT

The Navy's Distance Support (DS) capability¹ combines people, processes, and technologies into a collaborative Fleet support infrastructure without geographic boundaries. Distance Support remotely provides reactive, proactive, and predictive support to Sailors and afloat commands in logistics, maintenance and modernization, supply, manpower, personnel, training and education (MPTE), medical, and chaplaincy support. The DS program is managed by the Sea Warrior Program (PMW 240) within the Navy Program Executive Office for Enterprise Information Systems (PEO-EIS)

This paper is intended to encourage discussion about the state of DS within the Navy Enterprise to help realize the potential of DS to Reduce Total Ownership Cost (R-TOC) of both legacy and new ship acquisitions.

Over the past decade, the US Navy has introduced the concept and capability of DS to the Navy Enterprise, both ashore and afloat. What started as disparate support centers without a centralized call center has slowly grown into a two-part Navy-wide capability or data infrastructure to enable people, processes and technology that 1) supports the transition of workload / tasks and 2) supports requests / help from the ship to shore infrastructure.

During the past ten years of growth and improvement did implementation of DS throughout the Navy help R-TOC? Has DS yet to fully enable viable reductions in ship-manning, "Find Time" and the logistics footprint?

¹ CNO Memorandum on Distance Support dated 22 March 2007: Maximize the effectiveness and efficiency of shore support and facilitate shore infrastructure reduction through knowledge management, technology, organizational alignment, process standardization and optimal balance of centralization and decentralization.

While there is now a more centralized DS call center capability, structured process, and improved technology to help reduce ship manning and other life cycle / total ownership costs, improvements could continue to advance DS functional going forward.

INTRODUCTION

In 1999, the Navy adopted the DS concept to address the challenges associated with establishing a smaller, more versatile weapon system population, reducing manpower to operate and maintain these weapon systems, R-TOC and increasing the efficiency and effectiveness of a leaner shore infrastructure. DS was recognized as a viable way to use information technology (IT) and connectivity to provide "reach back" and maintenance support to Fleet personnel as an effective response to the challenges described above.

Also in May 1999, a memo from the Under Secretary of Defense for Acquisition, Technology and Logistics (USD/AT&L) stressed that the purpose of R-TOC is to maintain or improve current readiness while reducing Operations & Support (O&S) costs. The memo instructed the Services to focus on three general approaches.

- Reliability And Maintainability (RAM) improvements
- Reduction of supply chain response time and reduction of logistics footprint
- Competitive product support.

DS can be a key enabler for the continued re-engineering of the support infrastructure and can provide reduction of supply chain response time and logistics footprint; thus, providing program managers (PMs) with a viable process to meet the second USD/AT&L R-TOC approach cited

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| 14. ABSTRACT <p>The Navy's Distance Support (DS) capability1 combines people, processes, and technologies into a collaborative Fleet support infrastructure without geographic boundaries. Distance Support remotely provides reactive, proactive, and predictive support to Sailors and afloat commands in logistics, maintenance and modernization, supply, manpower, personnel, training and education (MPTE), medical, and chaplaincy support. The DS program is managed by the Sea Warrior Program (PMW 240) within the Navy Program Executive Office for Enterprise Information Systems (PEO-EIS) This paper is intended to encourage discussion about the state of DS within the Navy Enterprise to help realize the potential of DS to Reduce Total Ownership Cost (R-TOC) of both legacy and new ship acquisitions. Over the past decade, the US Navy has introduced the concept and capability of DS to the Navy Enterprise, both ashore and afloat. What started as disparate support centers without a centralized call center has slowly grown into a two-part Navy-wide capability or data infrastructure to enable people, processes and technology that 1) supports the transition of workload / tasks and 2) supports requests / help from the ship to shore infrastructure. During the past ten years of growth and improvement did implementation of DS throughout the Navy help R-TOC? Has DS yet to fully enable viable reductions in ship-manning, ?Find Time? and the logistics footprint? While there is now a more centralized DS call center capability, structured process, and improved technology to help reduce ship manning and other life cycle / total ownership costs, improvements could continue to advance DS functional going forward.</p> | | |
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above. While supply chain cost reduction often involves process changes, rather than new technologies, and can be implemented without significant investment, changing DS processes and technology without careful consideration of who, how, and why it will be used may negate cost savings in the long term.

As the DS community instituted various Navy-wide processes and technologies, it was identified that a robust, modern GDSC could be instrumental in reducing, the “Find Time” (response time) (Figure 1 below) for problem resolution, whether system, equipment or quality of life, resulting in R-TOC.

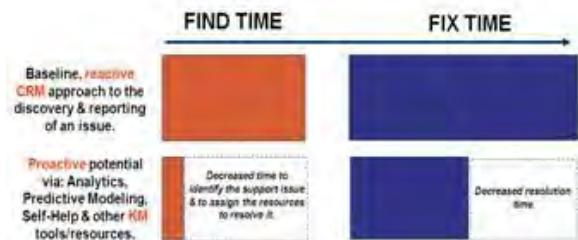


Figure 1 - DS Reduces Total Response Time
(DS CRM, *Distance Support Framework*, MS Powerpoint presentation, Oct. 2011)

Re-engineering the Navy’s support infrastructure for greater efficiency and cost-effectiveness is ongoing to support operationally-manned force structures while supporting the pillars of Sea Power 21. New acquisitions are being designed with integrated DS which will be critical to their success. Naval bases of the future must be configured to support these new ship classes and may not resemble today’s organic and contractor industrial complexes. Using DS as a primary enabler, regional or centralized readiness centers should be designed from the bottom up to provide real time readiness support to the Fleet.

Today, at its best, DS has shown to improve readiness, reduce the logistics footprint and improve the quality of service / life provided to Fleet personnel.

Yet, at its worst, DS labels have been applied to processes and applications pushed to the Fleet that are work process cumbersome, fail to “link” data to off-ship support, and use an inordinate

share of limited bandwidth. In this use, bandwidth is essentially the quantity of data that can be transmitted during a fixed period of time.

A discussion of how organizations provide online tools and applications to the Fleet is underscored by the Commander, U.S. Fleet Forces Command (USFFC) blog comments. ADM Harvey wrote, “... that during his time on *USS OAK HILL*, the crew candidly presented the goods, bads and others on the following programs [sic]:

- *Relational Administrative Data Management (R-ADM)*
- *Navy SKED [sic]*
- *Electronic Shift Operations Management System (eSOMS)*
- *Transaction Online Processing System (TOPS)*
- *Navy Cash*
- *Training / Operational Information Services (TORIS)*
- *Training Figure of Merit (TFOM)*
- *Casualty Reporting System (CASREP)*
- *Defense Readiness Reporting System – Navy (DRRS-N)*
- *Organizational Maintenance Management System - Next Generation (OMMS-NG) ...”*

Most, if not all, of these applications currently reside on the Navy Information Application Product Suite (NIAPS) version 2.3, which is one of the technology cornerstones of DS. In general, USFFC was able to obtain candid feedback from Fleet Sailors about their “working level” perception of various DS application’s capabilities. This type of feedback is invaluable since it is at this level DS applications either help work processes or don’t.

The take-away from those comments and others like them is that some DS applications work well, while others may actually add work instead of reduce work. One is reminded of a quote by Bill Gates, co-founder of Microsoft Corporation, “The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency.

The second is that automation applied to an inefficient operation will magnify the inefficiency.” Unfortunately some of the DS applications pushed to the Fleet may be in the second group.

USFFC has taken direct steps to further review and improve the issues and processes that led to the challenges found on USS OAK HILL (LSD-51), e.g., *Commander, United States Fleet Forces Serial 003 – Fleet Sustainment* and *Commander, United States Fleet Forces Serial 006 – Transitioning New Capabilities to the Fleet.*

In the future, as Acquisition Program Managers and Principal Assistant Program Managers (PAPMs) learn to implement the DS concept more effectively, it will allow the Fleet to operate globally with streamlined and operationally-manned force structures, improve business process efficiency and help reshape the Navy support infrastructure, all of which will provide real R-TOC.

Yet, an issue within the Navy that may be overlooked is a lack of common definition for DS in use by the Navy Enterprise. A parable from India about blind men touching different points on an elephant best describes how DS seems to be perceived within the Navy. That is not to say they are blind to the reality of DS, it is just that DS seen from one perspective often reflects only an understanding of DS in a single dimension and not as needed from a global Fleet perspective. As personnel involved with segments of Navy DS move positions, retire, or otherwise lose touch with DS developments, they often maintain that single perspective of DS, when actually DS has radically changed over the past 10 years and continues to do so.

The authors would propose the following definitions and vision be considered and used in a global sense when discussing DS within the Navy Enterprise.

Definitions

Distance Support is a capability that, through a combination of processes and technology,

delivers significant support to enable each command to operate at optimal capability in support of the command's mission. It provides the Sailor with a single desktop point of entry to an integrated tool bag of processes, while simplifying access to Naval maintenance, technical, supply, training, administrative, personnel resources and provides infrastructure or people-related support.

Moving Work Ashore (MWA) is not just about moving work ashore, but also the support processes (help) ashore. MWA can be best understood as a “catch all” phrase describing the people, processes, and technology that 1) supports the transition of workload / tasks and 2) support requests (help) from the ship-to-shore infrastructure and the responses back that completes the task. MWA is a combination of work, tasks, and processes previously completed aboard a platform or ship by the crew and now are completed off-platform, typically by shore infrastructure support. This work may be:

- the completion of forms, reports, naval messages, (e.g., an enlisted evaluation, a casualty report (CASREP))
- the compilation of data to develop a report (e.g., Navy Energy Usage Reporting System (NEURS)), equipment health data transfers (e.g., Enterprise Remote Monitoring System (eRMS) or Integrated Condition Assessment System (ICAS))
- the accomplishment of work tasking, (e.g., corrective or preventative maintenance actions performed under Performance-based Logistics (PBL))
- or other non-organic support and shore-based infrastructure.

As DS continues to improve, the use of the term MWA may be superseded by a better definition. Therefore, the reader is cautioned that using the term MWA may not fully describe the actual process or applications needed or used.

Distance Support Moving Work Ashore (DS MWA) as currently construed is a combination of MWA enabled by common DS transferring or moving information, data or task functions to

and from the seaframe and accomplishment at an off-platform location. This includes information or data that is only available on the platform that must be forwarded to the off-ship and ashore infrastructure for work completion, usually via applications residing on the platform, e.g., via DDG 1000 Integrated Software Support Suite (IS3), Navy Tactical Command Support System (NTCSS), NIAPS and information that been changed or updated by shore support and is needed by the crew afloat. In the case of newer ship classes like the Littoral Combat Ships (LCS) and DDG 1000 Class Destroyers, some of the work, such as preventative maintenance (PM), predictive maintenance and condition-based maintenance (CBM), supply and logistics functions, and some administrative actions, will be partially or completely absorbed by the shore infrastructure requiring very little input by the crew.

Distance Support Vision

Guidance and policy indicates DS should be viewed as the Fleet's principal readiness enabler, facilitating timely technical assistance, knowledge / education tools and logistics support. DS will help bring the Navy Career Tools (formally Sea Warrior) application to sea, remotely monitor equipment health, improve medical care and supply management, streamline Navy Continuous Training Environment (NCTE) for Fleet training and validate optimally based manning of new systems and platforms.

Sailors will use DS to manage their careers, collaborate with subject matter experts and access authoritative information in near real time wherever they are operating. Every Sailor will receive the same experience regardless of geographic location.

As such, DS delivered to Fleet platforms must be able to maximize the effectiveness and efficiency of shore support and facilitate shore infrastructure reduction through knowledge management (KM), technology, organizational alignment, process standardization and optimal balance of centralization and decentralization.

To fully achieve the potential of DS, program managers and process owners Navy-wide will require a thorough understanding and knowledge of DS to effectively integrate processes, concepts and technologies in their Total Life Cycle Systems Management (TLCMSM) if they are to realize R-TOC resulting from implementation of DS.

At the recent 26th Marine Machinery Association Annual Spring Conference in 2011, Rear Admiral David Lewis, Program Executive Officer, Ships, Naval Sea Systems Command, noted that the Navy's success in building and maintaining a cost-effective force of 313 ships is directly linked to its success in implementing an innovative, capable and cost effective DS strategy.

Distance Support and New Ship Acquisition

Two ongoing Navy acquisition programs, the LCS and the DDG 1000, will rely heavily on DS processes and applications to fully enable the operational-manning of these ships. The recent details learned about the effectiveness of DS applications and processes to move workload ashore can be obtained from Littoral Combat Ship (LCS) Class lessons learned.

Some of the early lessons learned from LCS are 1) overly optimistic Fleet expectations of near real-time bandwidth, 2) crews trying to follow established processes correctly with little or no DS hands-on experience, and 3) not having established and tested end-to-end (E2E) DS processes. Also, the lack of effective DS tools and applications or funding for the tools and applications to support MWA negatively impacts DS capability.

The DDG 1000 Class of ships will also incorporate new automated systems and equipment functions, as well as, existing DS to effectively move workload ashore. The planning for DS to enable planned reductions in crew size for the DDG 1000, 1001 and 1002 also provides insight and lessons learned useful to better developing Fleet-wide DS.

While it must be remembered that there are significant differences between the DDG 1000 and the LCS Class of ships, both operationally and in manning, the implementation of effective DS to support the LCS Class of ships serves as a viable and relevant model for DS to support the DDG 1000 Class, and other planned ship classes to follow.

Where then does the concept and functionality of DS stand today, slightly over 10-years after the Navy adopted DS in 1999? The following section provides a basic overview of key tenets to help the reader understand the current state of DS.

NAVY DISTANCE SUPPORT

The Sea Warrior Program (PMW 240) manages the Navy's Distance Support, combining processes and technologies with personnel to provide a collaborative DS Fleet support infrastructure. DS provides reactive, proactive, and predictive support to Sailors and the Fleet to enable support across the pillars of Personnel, Equipment, Supply, Training, Ordnance, Installations and Facilities, Medical and Networks and Business Systems.

Navy-wide DS guidance is provided by Chief of Naval Operations (CNO) policy and the joint Commander, Naval Surface Forces (CNSF) Naval Sea Systems Command (NAVSEA) approved Top Level Requirements for DS. Distant Support Strategy is guided by those policies and relies heavily on the lessons learned for implementation Navy-wide.

There are three major components of DS:

- Global Distance Support Community (GDSC)
- Customer Relationship Management (CRM)
- Navy Information Application Product Suite (NIAPS)

Distance Support Policy and Requirements

Chief of Naval Operations (CNO) Distance Support Policy of 22 Mar 2007, states that DS combines people, processes and technology into a collaborative infrastructure regardless of geographic location. Effective, reliable and timely movement of information is required to enable DS capabilities and processes. DS shall:

- Enable process improvement
- Re-engineer the support infrastructure allowing for an efficient use of shore based assets and capabilities
- Provide classified and unclassified information transfer
- Optimize balance between organic and shore based support moving towards regionalized or centralized support providers
- Achieve infrastructure reductions through Knowledge Management (KM), technology and organizational alignment
- Consolidate help desk functions through operation of the GDSC and tiered Sources of Support (SoS).

The Commander, Naval Surface Forces (CNSF) / Naval Sea Systems Command (NAVSEA) Distance Support Letter of 4 Sep 2007, delineates the following:

- Use DS and NIAPS for data transfer and management
- Use GDSC Tiered services and CRM as the single point of entry for all requests.
- Continuous ship to shore connectivity is not necessary
- Enable support requests in seven days or less
- Enable emergency requests within 48 hours
- Enable real-time troubleshooting
- Minimize bandwidth usage
- Minimize shore infrastructure
- DS should extend the capabilities of the operating forces by providing distributed reliability engineering maintenance support functions

- NIAPS shall support hosting all shipboard technical manuals and documents
- Application owners are the life cycle managers with full accountability and responsibility for their applications acquisition and follow on sustainment.

COMNAVSURFOR (CNSF) and the LCS Class Squadron (LCSRON) are working with the Program Executive Office (PEO) - Ships programs for DDG 1000 (PMS 500), Littoral Combat Ship (PMS 501), the Naval Sea Systems Command, Deputy Commander for Surface Warfare (NAVSEA 21) and Space and Naval Warfare Systems Center (SPAWAR) to enhance the DS systems of LCS and its support infrastructure ashore. DS is critical to supporting minimal manning on LCS and both CNSF and LCSRON are pushing several DS initiatives. Future enhancements to the DS architecture supporting LCS will use the top level requirements (TLRs) the Surface Warfare Enterprise (SWE) has published for DS on surface force ships. These requirements focus on the pillars of DS as outlined in the CNO's Distance Support Policy memo from 22 May 2007.

Additionally, CNSF approved DDG 1000 Shore Support Specification of 20 Nov 2007, (currently under revision), states DDG 1000 will use DS products to assist in moving work to shore, capturing, measuring and reporting performance metrics and all related support data.

Global Distance Support Community (GDSC)

Recognized by the call center industry as “top of its class”, the GDSC is at the core of the Navy’s DS capability providing Fleet forces with a single entry point to assist with problem resolution. The GDSC is the hub of the shore-based Sources of Support (SoS) network and provides Fleet assistance in:

- Ship systems: (e.g., hull, mechanical and electrical (HM&E) and weapons systems)

- Quality of life: (e.g., medical and chaplain care)
- Personnel: (e.g., career, manpower, training, etc.)
- Supply and logistics: (e.g., technical data, warranty service, ship maintenance scheduling, etc.)

The GDSC is available 24/7/365 worldwide and provides accurate and timely support. If personnel cannot solve a problem with organic resources, then, as mandated by CNO policy, they will contact the GDSC. This network provides access to SoS with problem solving capability, regardless of complexity or simplicity of the problem. Contact with the GDSC generates a Remedy© Request (Trouble) Ticket that is essential for capturing necessary contact information and routing the request to the appropriate SoS for solution, management and problem resolution.

Figure 2 below shows a snapshot of the September 2011 call volume by category as an example of the types of calls received by the GDSC – Technical Call Center.

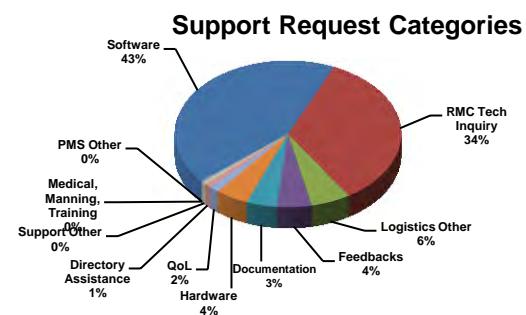


Figure 2 - GDSC - Technical Support Center Request Categories
(GDSC – Technical Program Manager, *Monthly Status Report for September 2011*, Sep. 2011)

Broken out by category, the GDSC – Technical Call Support Center Request (Trouble) Tickets volume for the month of September 2011, was:

| Subject ID | Total |
|--|-------|
| Software | 1,800 |
| Regional Maintenance Center (RMC) Tech Inquiry | 1,444 |
| Logistics Other | 238 |
| Hardware | 207 |

| | |
|----------------------------|--------------|
| Documentation Other | 184 |
| Feedbacks | 197 |
| Quality Of Life (QoL) | 61 |
| Directory Assistance | 41 |
| Support Other | 18 |
| Medical, Manning, Training | 16 |
| PMS Other | 2 |
| Total | 4,208 |

There are three GDSC Call Centers, each focused on their specific area of expertise: 1) GDSC – Technical Support, 2) GDSC – MPT&E Support, and 3) GDSC – Logistics Support. Each GDSC Call Center will have similar data for the call volume processed within their area of expertise.

Distance Support Customer Relationship Management (CRM)

In its simplest form, Customer Relationship Management (CRM) is the manner in which the Navy's shore infrastructure manages their interactions with their customers regardless of customer location (i.e., ashore or afloat).

DS CRM is both a process and a toolset providing conduits-of-connectivity to and from the customer via a workflow process. The process includes the tracking of Support Requests across the entire collaborative shore infrastructure supported by an information repository. The repository is tied to a business analytics and a predictive knowledge management (KM) component. This component serves to reduce the "Find Time" when rendering assistance.

Successful DS CRM solutions depend on the expertise of the particular GDSC support provider (i.e., Technical, Supply, or Manpower, Personnel, Training & Education (MPT&E)), and SoS Subject Matter Experts (SMEs), to interact with customers through any channel chosen (i.e., message, email, phone, chat, walk-in) as well as a way to track and maintain real-time records of customer interactions for metrics (Figure 3). These metrics provide both CRM management and end-users a complete view of customer requirements, needs and behaviors during interaction within the DS infrastructure

and allows the Navy Enterprises and DS shore infrastructure to better serve end users. Effective DS CRM delivers personalized and informed service on-demand.

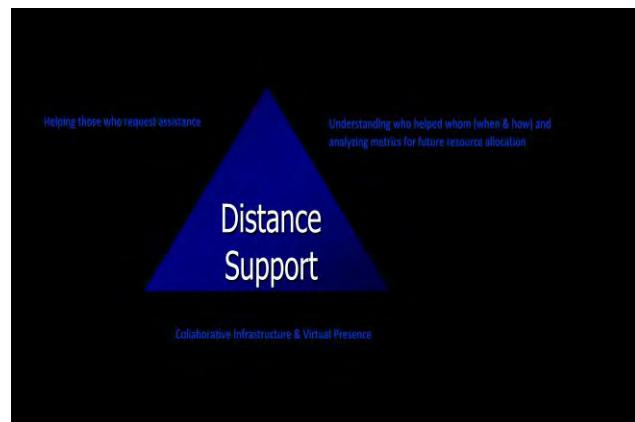


Figure 3 - Distance Support Framework
(DS CRM, *Distance Support Framework*, Oct. 2011)

FUNCTIONAL DISTANCE SUPPORT PRODUCTS AND INFRASTRUCTURE

The Navy DS Program was established in August 1999 with the stand-up of the GDSC, a 24/7/365 Tier 1 help desk through a collaborative agreement between NAVSEA, NAVSUP, SPAWAR and the Fleet Commanders. From August 2000 to present, efforts have centered on the establishment of a collaborative support infrastructure and common CRM solutions to support request documentation and tracking. This CRM system is designed to include workflow management, and provide a shared data and metrics environment for process, product and service improvement for Fleet Support and readiness.

The CRM software selected by PMW240, is Remedy®, a Commercial Off-The-Shelf (COTS) configurable software. Remedy® was the Functional Area Manager (FAM) Business Case Analysis (BCA) solution, as well as the highest rated by Gartner Incorporated, an information technology research and advisory firm.

To execute the Navy's DS CRM Strategy, a Shared Data Environment (SDE) was created. Use of a DS SDE implies at least a common business culture where information is shared and managed via the Remedy© Request (Trouble) Ticket generated by the SoS. This allows all Navy commands to use same business rule terminology, gain visibility and ultimately become more productive and efficient. Over time better cooperation among Navy commands has led to the development of an enterprise-wide CRM that serves a wider Navy audience and measurably improves day-to-day Navy business.

ENTERPRISE CUSTOMER RELATIONSHIP MANAGEMENT (eCRM)

The enterprise CRM (eCRM) component of DS is a major part of the GDSC capability. eCRM provides key applications, shared data, resolution tracking, and ad hoc support capabilities, focusing on consolidation of all Navy support request data into a single, robust, enterprise system that can aggregate information and bring support visibility to key command personnel. DS eCRM metrics allow all commands and SoS participating in the SDE to gain insight into performance, volumetric, and functional areas associated with documented support requests.

Together, the eCRM and SDE yield millions of records in a considerable base of episodic data from which KM technologies can harvest decision-enabling information. In this way, the Navy DS approach is holistic; it captures and stores data from across the spectrum of the Defense Readiness Reporting System – Navy (DRRS-N) categories to identify and mitigate factors contributing to readiness shortfalls. The SDE integrates selective data from authoritative Navy sources so that a problem or issue is well defined. In total, DS KM initiatives are improving both the effectiveness and efficiency of shore support resources through a more analytical use of information.

DS KM also complements program metrics in providing decision enabling information and potentially mitigating systemic issues across the Navy Enterprise. However, the challenge of

effective DS KM is to capture and promulgate not only explicit knowledge or "know-what" generated by transactions within the GDSC, but also the tacit knowledge or "know-how" gained through the process of trouble or issue resolution.

The DS CRM, SDE, SoS Network:

- Is an integrated shore infrastructure solution providing single multi-channel point of entry for Fleet reach-back
- Is the DS system that provides assignment, tracking and timely resolution of Fleet generated requests for any assistance
- Provides a uniform, automated process (standardized priority system) with a guaranteed response time for user issues.

The eCRM solution provides a central help desk server from which activities can either enter trouble tickets directly into Remedy© via the Web (thereby eliminating their need for a separate Remedy© server) or interface core data elements (as defined by the help desk working group). eCRM includes enterprise design and support, licensing, re-hosting support and server administration.

SoS POLICY / BUSINESS RULES

DS policy and business rules are established to maximize efficiencies and increase productivity while codifying a repeatable and uniform process for handling customer requests in a timely and efficient manner. The DS rules are reviewed on a regular basis by personnel from the DS SoS infrastructure.

DS SoS business rules are composed of:

- Remedy© operation and configuration management
- Support request transactions
- Reports
- Customer follow-up
- SoS working hours
- Threat-driven DS operations

- SoS Matrix use / maintenance
- Unit table maintenance
- Remedy© Distributed Server Option (DSO) installation and test
- SoS technical business rules.

SoS policy and business rules allow the GDSC to achieve and ensure effective Navy DS CRM. The formation of SoS-accepted and ratified business rules helps the ongoing process of consolidating and streamlining the nearly 800 Navy call centers, help desks, support centers and customer support functions, many of which duplicate efforts and do not share data, into a seamless GDSC for the Navy Enterprise.

Programs that use DS to deliver afloat assistance to legacy ships as well as ships manned with lean crews (e.g., LCS and DDG 1000) will need to ensure the GDSC has the most current platform-specific SoS Matrix data that the ships' crews and shore support infrastructure need. All applicable Memoranda of Understanding (MOUs) between program offices, applicable private contractors, and shore support infrastructure will need to be drafted and implemented by those program offices in order for effective DS via the GDSC eCRM structure.

NAVY DS METRICS REPORT

Based on the features provided earlier in DS development, a capability is provided to display Remedy© Request (Trouble) Ticket data for metric review and analysis by commands and other organizations. The DS CRM team provides a standard metrics report based on Fleet criteria, as well as the capability to develop custom reports to end-users.

Distance Support Navy Information Application Product Suite (NIAPS)

Bandwidth is a major limitation to Internet access from deployed ships. One requirement for NIAPS development was to address and resolve bandwidth limitation issues. NIAPS embeds critical applications and data locally on ship networks. This is important to the Fleet because it is faster and less expensive than

increasing external bandwidth and satellite time for off-ship access while deployed (see Figure 4 below).

Currently 232 Navy platforms use NIAPS, which fully supports both classified and unclassified data and information via processes on either the Secret Internet Protocol Router Network (SIPRNet) or Non-Classified Internet Protocol Router Network (NIPRNet).

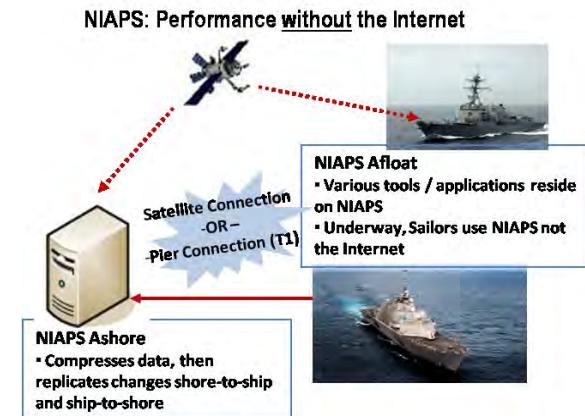


Figure 4 - NIAPS Data Paths
(PMW 240, *Fact Sheet Distance Support, Oct. 2011*)

On LCS and legacy ships, NIAPS is installed on the ship's existing server, which provides a Web-based information system used to support, distribute and collect information that exists in the legacy, LCS IT-21 shipboard environment. This system hosts an intranet that maintains information such as: training courses, maintenance documents and maintenance data collection, as well as business support.

On DDG 1000 Class ships, the method by which NIAPS is installed is a significant departure from current Fleet installations. On DDG 1000 ships, installation of NIAPS and other applications such as the Naval Tactical Command Support System (NTCSS), etc., do not require additional application-specific server hardware. Instead, products such as NIAPS, and NTCSS will be embedded (wrapped) within the Total Ship Computing Environment Infrastructure (TSCEI), Integrated Software Support Suite (IS3) infrastructure (and loaded on DDG 1000 TSCEI/IS3 blade servers). IS3 and

embedded DS systems within DDG 1000 TSCEI will provide the capability to process data, transfer data, and run application software solutions in support of the ship and crew.

NIAPS version 2.3 currently comprises more than 40 applications and databases launched from a single DS portal and runs applications specifically tailored to individual afloat units for training, career management, maintenance, technical drawings, logistics, human resources and morale and welfare support. These applications are produced by more than 20 different Navy functional organizations. Keeping these applications operationally available for the crew is a challenge, both for the organic and shore support NIAPS IT teams.

Examples applications on NIAPS include:

- Navy Knowledge Online (NKO)
- Surface Warfare Officer Schools Command (SWOS) or individual training
- Advanced Technical Information System (ATIS) for technical documentation,
- PMS Scheduling (SKED)
- Food Service Management (FSM3).

For morale and welfare support, local web content includes a DS website (formally the Navy AnchorDesk), NKO, and information from the Bureau of Personnel (BUPERS).

The NIAPS local suite provides information to users during times when networking external to the ship is unavailable. When the ship has network connectivity with shore, amendments (updates) to the content can be obtained through the NIAPS Global Amendment Servers which are currently hosted at the Naval Surface Warfare Center (NSWC) Crane Division, Crane, IN. NIAPS amendments are comprised of changes to web based content, training materials, ship manuals, technical drawings, human resource data and other data intended to reside on ship installed NIAPS. Basically, amendments are highly compressed files that are only readable by the deployed NIAPS systems. Data replication is implemented through the use of software residing on NIAPS to generate replicated files which are transferred from ship-to-shore and shore-to-ship automatically or

manually. This process enables limited b/w data replication from ship-to-shore and shore-to-ship.

NIAPS APPLICATIONS

NIAPS is a result of the Joint Distance and Response (JDSR) Advanced Concept Technology Demonstration (ACTD) team concept to provide timely access to national, global subject matter experts (SMEs) and knowledge to the warfighter and maintainer, in addition to, providing a telecommunications platform for remote diagnostic support, help desk operations, condition and case-based maintenance, collaboration, and interactive electronic technical manuals (TMs). The JDSR ACTD efforts resulted in a coordinated process for non-tactical application, content selection for deployment, including software and hardware licenses, standardized training resources, meeting of logistics requirements and help desk integration with the GDSC, which ultimately became known as NIAPS.

NIAPS version 2.3 is the predominant version in the Fleet today. This version provides:

- 1) products to deliver directory services, e-mail, Web acceleration, office automation applications, collaboration tools and antivirus software
- 2) the NIAPS software framework providing support programs, code libraries, a scripting language to help develop and integrate the different components
- 3) the Program of Record (PoR) applications described earlier in this paper.

As described, the DS functionality contained within NIAPS is defined in large part by the PoR applications.

As of the writing of this paper, NIAPS version 2.4 is entering code lock-down with a planned release in mid-2012 with planned Fleet upgrades beginning shortly thereafter.

Because DS CRM and NIAPS are key enablers for delivering afloat assistance to the legacy Fleet assets, these capabilities are being introduced to most new construction platforms

in some form. These range from a basic level of GDSC call requests for help, to applications and processes specifically designed to move or reduce workload, and capturing and transmitting health status of equipment and systems. As discussed above in previous sections, two new ship classes that are and will use DS to significantly reduce manning requirements for R-TOC are the LCS and DDG1000 ships.

Both of these ship classes have incorporated DS as part of the design concept for their operation and are discussed more in the following sections.

LITTORAL COMBAT SHIP (LCS) DISTANCE SUPPORT

The LCS warship concept requires new processes that will serve as a model for future fleet operations. The LCS is a fast, agile and networked surface combatant that provides capabilities and flexibility to US maritime dominance now and into the future. The LCS will operate with mission packages that are loaded on the seaframe to execute missions as assigned by commanders. These mission packages focus on three areas of littoral threat: Anti-Submarine Warfare (ASW), Mine Warfare (MIW) and Surface Warfare (SUW). There is also the SUW Maritime Security Operations (MSO) mission package capability to counter a more global threat.

LCS crews depend on DS because the ship's force is dramatically smaller in size than those on legacy ships. The LCS ship's small 40-man crew is focused on performing multiple roles to accomplish the ship's mission, and therefore has very little maintenance and administrative role during deployment. This operational paradigm shift required development of new processes and applications to meet ship mission requirements, many of these processes and applications have a DS enabling element.

LCS Wholeness Concept of Operations (CONOPS)

A significant challenge facing the LCS and other legacy ships is capability and availability of bandwidth for DS applications to ensure the requisite reach-back exists to support the minimum manned crew. Solutions to these challenges are captured in the LCS Wholeness Concept of Operations, Revision C (CONOPS)

The CONOPS states, *“Minimal shipboard manning presents significant challenges to a ship crew’s ability to effectively accomplish traditional supply and maintenance workload afloat. The key enablers that will allow LCS minimally manned platforms to succeed will be maximizing the efficiencies created by DS and effectively developing more refined processes that transfer workload ashore.”* And, *“Maintaining threshold manning levels without burdening the crew with excessive workload, losing capability, impacting safety, creating excessive new shore support infrastructure, over-taxing the personnel distribution process or negatively impacting other Fleet operational assets. Standard Operating Procedures (SOPs) and information technology solutions must be developed to ensure the proper level of DS to minimize the administrative burden and allow the crew to concentrate on operations.”* As can be surmised, LCSRON is addressing areas within the implementation of DS that were originally either overlooked or not emphasized in the LCS planned design.

For the LCS to operate, a number of assumptions are made and articulated in this CONOPS. As needed DS processes were evaluated for LCS, the teams found that collateral and most administrative duties could not be performed remotely to support shipboard personnel using available DS application formats. For DS to be leveraged for collateral and administrative duties those applications must be re-evaluated and in some cases upgraded. It is also critical for successful DS implementation to have Standard Operating Procedures (SOPs) developed and tested End-to-

End (E2E) for each of the processes used to move work ashore in support of the crews.

For LCS, developing new shore based DS technical capabilities and operating procedures are required for success of the transformational LCS concepts of minimal manning and multi-crewing. DS applications, processes and capabilities must expand in a collaborative manner as the Navy explores alternatives to operate ships with fewer Sailors and improve business process efficiency.

Two drivers for implementing DS for the LCS will be the Maritime Support Detachment (MSD) and the Immediate Superior in Command (ISIC), with the ISIC as overall coordinator and top-level decision maker. **(Author's Note: Recent changes in the Navy shore infrastructure may supersede the MSD and ISIC concept as discussed in this paper.)** As conceptualized, the MSD will be the central cog in the sustainment support infrastructure ashore and be available to provide both routine and urgent support to forces afloat.

In order to support LCS administration via DS, a full service administrative detachment was formed using the existing Personnel Support Detachment (PSD) Afloat (formerly known as Pay and Personnel Ashore (PAPA)) process. While the current process used by the PSD Afloat offers excellent support for pay and personnel administration, it does not completely replace a ship's office, because its services do not include career counselor administration, maintaining instructions and notices, processing general ship's secretary correspondence, processing legal paperwork, etc. Therefore, a more robust organization was developed within the LCS CLASSRON organizational structure to support legal admin, postal and career counseling paper work and to process routine administration normally conducted onboard a ship with a goal of removing all of these functions from the ship.

One of the issues that challenge those in the Navy and specifically ship classes like the LCS and DDG 1000 is putting valid and realistic DS placeholders in a new ship design. During the

acquisition design phases, without first understanding what DS is currently available, what capability that DS actually has in relation to MWA and whether the DS capability is fully funded for development and delivery in a timeframe needed, and as seen with the LCS delivery, can lead to significant challenges to both the program and the ship's crew.

While several applications reside on NIAPS to "handle" the functions and many previously considered them DS applications (some still do), the reality found by the LCS team was actual functionality of the applications did not support DS MWA processes.

There are applications currently being fielded that are supposed to reduce and move work ashore via DS, yet in reality, the applications' processes will not move needed data without manual intervention. For example, when approximately 60 NIAPS Work Transport Applications were analyzed to enable MWA for LCS approximately 25 percent of them actually moved work processes ashore. Several applications had to be developed solely for LCS, because the existing DS applications necessary to allow reduced manning did not actually move workload ashore or would not be available in time to meet LCS delivery to the Fleet.

As stated in the LCS Wholeness CONOPS, *"The key enabler to LCS logistics success will be maximization of efficiencies created by DS and the development of processes that effectively transfer workload ashore."* Applications that are work cumbersome or require manual intervention will not meet the LCS or other optimally manned ship's DS requirements. Since DDG 1000 will also be dependent on DS, as well as new automated system and equipment functions to enable the 120-man crew to effectively carry out the ship's missions, incorporating lessons learned from the development and successful fielding of LCS will be important.

ZUMWALT CLASS DISTANCE SUPPORT

Incorporating Human Systems Integration (HSI) from the initial design stages, the ZUMWALT Class Destroyer program, unlike previous ship acquisition programs, is the first major combatant to have an explicit Key Performance Parameter (KPP) for Manpower.

DDG 1000's overall maintenance workload was reduced relative to legacy seaframes and platforms, through use of advanced ship equipment and systems technologies, systematic maintenance planning and analysis. The DDG 1000 program intends to incorporate and leverage LCS, other program DS lessons learned, and the evolving waterfront support infrastructure into upfront planning to better transition the ship class to the Fleet. Since the DDG 1000 operational-manning concept is very different than that of the LCS transformational concepts for minimal-manning and multi-crewing, developing new shore based DS technical capabilities and operating procedures is not as critical and the current planning is to leverage either existing or LCS developed shore support to keep Operational & Sustainment (O&S) costs controlled.

Shore Integration

DDG 1000 will use the existing shore infrastructure and SoS wherever economically and operationally beneficial, yet there are some instances wherein the introduction of this ship class imposes additional requirements upon the existing shore support system. Although, as the DDG 1000 program matures, there may be instances where new areas of Fleet and Shore DS infrastructure need is identified and support development is required. The DDG 1000 concept of operational-manning necessitates workload migration ashore of preventive and corrective maintenance with periodicities greater than 90 days, as well as other legacy ship functions. Use and implementation of the US Navy's DS infrastructure, policies, applications and processes will be required to provide the required support to DDG 1000. DS will provide,

in large part, the enabling mechanism and processes to interact with required shore infrastructure needed to provide the necessary support in the areas of maintenance, training, logistics and manpower and personnel.

As mentioned above, lessons learned from DS implementation on the LCS show many of the DS applications presumed to help move workload ashore actually did not provide MWA or are not available to the ship when needed for delivery. In the next few years, the first of the ZUMWALT Class will be delivered to the Fleet. However, funding constraints may impact the the ability of DS applications to keep pace with this new ship class requirements, indicating a historical repeat of the issues faced by DS implementation on LCS.

Ship Integration

Meeting the DDG 1000 KPP for operationally-driven manning, the ship's crew DS is enabled by three levels or layers of Information Technology (IT) infrastructure that minimize, automate or moves work and task processes. First of these is the ship-wide TSCEI; second, embedded within this TSCEI ship-wide network core is the IS3; and finally, wrapped within this IS3 software are the multiple DS related PoR applications. These may be embedded in suites of software applications like NIAPS, NTCSS, in stand-alone PoR applications or in Web-based stand alone PoR applications.

Lessons learned from the implementation and use of DS within the operational design of new ship classes will provide validation of DS processes and technology useful for future platform acquisitions, like the CV(X) and CG(X) and others. Yet will DS, as currently used and delivered in the Fleet, provide improved cost savings that can be realized? The following section raises some points the authors believe should be discussed widely throughout the Navy Enterprise.

DISTANCE SUPPORT COST SAVINGS

A recent paper by Nicolas Guertin, PEO-IWS and Paul Bruhns, ManTech International Corp., “Comparing Acquisition Strategies: Maintenance Free Operating Period (MFOP) vs. Traditional Logistics Support” contained some interesting data about cost savings realized through the use of DS. In their discussion of implementing MFOP for existing systems in a stepwise manner, they state, *“The first step is to capture the value of distance support from ship to shore through a network connection that bridges between the organic system maintainers (O) to intermediate subject matter experts and tech assist (I) levels. This O-to-I Level Maintenance Bridge requires little product integration and will immediately generate cost savings. The table below highlights an example program that achieved a 15:1 cost savings ratio when employing distance support services over deploying tech assets:*

| FLEET Tech Assist Data for Submarine Enterprise | | |
|--|--|--|
| 120 FTA Events Performed | | |
| 93 Local (Norfolk) | | |
| 27 Out-Of-Area | | |
| 100% Distance Support (DS) Attempts (CFFC/Command Policy) | | |
| 16% Success Rate Overall On All FTA Events | | |
| 37% Success Rate On Out-Of-Area Events | | |
| Average MHs Per Event | | |
| 19 MH Via DS | | |
| 164 MH Via On-Site Support | | |
| Average Cost Per Event (Based on \$60.00 Per Hour) | | |
| \$1,140.00 for DS | | |
| \$9,840.00 Labor and \$5,500.00 Travel For On-Site (\$15,390.00) | | |

These methods generated faster response time for solving the system problem, as well as lowering labor and travel costs.”

While that information was more specific to the submarine community, it could be assumed that based on surface ship technical assists being resolved remotely by the GDSC vice having deployed technical assist visits would result in similar cost avoidance or savings for the surface Fleet as well. These potential cost savings would be largely attributed to the DS enabled reduction of “Find Time” and the ability to resolve issues remotely.

DS can provide real cost savings, but is DS used by Sailors in the Fleet? To better understand Fleet DS usage, the authors requested a data pull from the DS CRM Metrics database to see which surface commands used DS from 1999 to 2011. The following table in Figure 5 below shows requested assistance call volume for the GDSC. While the call volume data generated by this request was not associated to cost in the same method as was done by Guertin and Bruhns above for the submarine community, i.e., cost per resolved help request, it can be assumed that there was some level of savings, cost or time, realized by the surface Fleet through DS instead of through deployed assistance.

DDG 51 and LCS call volume over the past ten years has been increasing. The DDG 51 Class had the highest volume of requests as indicated (dark blue) and also shows a general increase in GDSC requests. This was expected since the DDG 51 Class ships are also the largest population of surface ships in the Fleet.

| Year | Call Volume | |
|------|-------------|--------|
| | DDG 51 | LCS |
| 2002 | - | 1,569 |
| 2003 | - | 7,159 |
| 2004 | - | 10,649 |
| 2005 | - | 14,483 |
| 2006 | - | 40,187 |
| 2007 | - | 41,820 |
| 2008 | - | 43,585 |
| 2009 | - | 67,965 |
| 2010 | - | 93,072 |
| 2011 | - | 80,478 |

Most surface ship classes also generated increases in GDSC requests during that same period, although from 2006 – 2008 call volume was fairly consistent. The data named, “All Other” includes all other surface ships not specifically listed, the United States Coast Guard (USCG) and Military Sealift Command (MSC), as well as submarine and some non-ship data. In general, the GDSC is experiencing increases in call volume each year, with call volume in 2010 approaching nearly 400,000 requests. In the Figure 5 below, year 2011 reflects partial year data and for most ships is expected to surpass

the call volume of 2010.

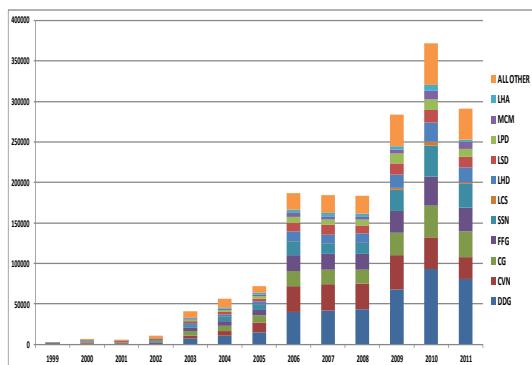


Figure 5 - Navy Enterprise CRM Call Volume Growth

(DS eCRM Metrics Data, 2011)

Extrapolating from the Guertin and Bruhns' data described earlier with respect to similar requests, as shown in Figure 5 above, from surface fleet assets, can be conjectured that DS is resulting in overall cost savings. This conjecture is based on at least two assumptions, 1) anecdotal information indicates that since Fleet Sailors repetitively use what works and won't use it if it doesn't, then increases in GDSC requests may indicate a correlation in the success of problem resolution, and 2) Navy leadership will not long embrace or tolerate a process that is not resulting in success.

While there is cost reduction causality surmised by the general increase in GDSC request volume by Fleet assets shown above, the increase may also be related to better Fleet awareness of the Chief of Naval Operations (CNO) Distance Support Policy of 22 Mar 2007, and the guidance dictated by the Joint Fleet Maintenance Manual (JFFM), both of which requires the use of DS when organic efforts cannot resolve a problem or issue. There is also some GDSC call volume increase each year that can be attributed to the ongoing effort by the DS CRM team to capture other sources of "support" data into the eCRM SDE that may not have been included in earlier year's data and in the case of the DDG 51 data, a gradual increase in total ships over the 10-years. Regardless, the assumption seems valid that the Fleet is increasing its usage of the GDSC to resolve issues and problems over

deploying assist visits, likely resulting in R-TOC.

Conducting one or more business case analysis (BCA) of surface unit cost savings resulting from DS similar to the Guertin and Bruhns' data, would allow Navy leadership and Program Managers (PMs) more precise information of DS generated cost avoidance or savings that could then help justify (or not) increased incorporation of DS in acquisition programs.

ISSUES AND BARRIERS

The authors believe the following Issues and Barriers affect full incorporation of DS into the Fleet for maximum cost savings.

- 1) Inconsistent definitions and application of DS confuses what DS is and how to best use it. Defining what DS currently provides today and what it needs to become tomorrow in order to fully enable operationally-manned platform crews to meet mission requirements is essential. DS over the past 10 years has meant something much different to each program, group or user involved with DS. PMW-240's on-going Capability-Based Assessment (CBA) of DS will help define a base-line for distance support, as will on-going reviews of Fleet software applications used to support ship crews. Using common DS definitions throughout the Navy Enterprise can help prevent misinterpretations of DS capability.
- 2) Incorporation of DS 'Best Practices' both within the Navy, Department of Defense (DoD) and other government organizations would result in better DS. As an example, the Navy has expended hours and dollars on Remote Monitoring (RM), which is a real capability that through DS can result in significant savings. However, the Navy still doesn't have a seamless and fully automated RM capability that works across most platforms. At the same time, the auto industry has embraced RM and predictive modeling to actually realize reduced "Find Time" for issues and problems, e.g.,

OnStar™. While a modern warship is infinitely more complicated than a car or truck, the auto industry concept seems expandable, especially since new ships like the DDG 1000 have upwards of 30,000+ sensor outputs available for capturing equipment and system health.

- 3) Promoting open discussions of DS throughout the Navy, actively bringing in information about other DoD, contractor and organization's DS successes is required for Navy DS implementation as needed for an affordable 313-ship Navy. By ensuring DS process and application status transparency, common definitions and shared lesson learned, DS can transform the Fleet workforce and reduce total ownership cost. Yet where are the DS conferences and symposium discussions that provide the acquisition community open information about DS processes and applications across the Fleet? Sharing of DS "Best Practices" seems isolated to small disparate organizations within the Navy Enterprise. Although currently under revision, the DS CRM team maintains a DS website that would be an ideal repository of DS MWA information, comments and lessons learned, or if not at that site then on a site like the USFFC website. Regardless of where the data is held, there needs to be open discussions and a common data repository so that PMs and their staff can learn, discuss, ask about effective DS MWA. Learning what DS processes work well to move workload ashore and ensuring everyone understands any planned changes to DS applications will help PMs and their staff better implement viable DS within the various Navy programs.
- 4) Not fully embracing the concept of DS into a ship acquisition process. If the Navy is to fully realize the CNO's vision of DS as an optimizer of organic and shore infrastructure at the lowest TOC, then throughout Navy acquisition, DS should be integrated into various disciplines of systems engineering for influence of system design, starting at the earliest phase of acquisition. Navy DS is

part of the system design and as such, human capital and supportability requirements that mitigate shipboard workload must be addressed concurrently with other system performance and design requirements.

- 5) Organizational parochialism prevents sharing of DS success. Unfortunately, an often inherent issue of business processes within large organizations is the tendency to hold close information that provides success within that organization. Often this "helps" those organizations improve funding for programs, etc.; however, this may not be the best course of action for robust implementation of DS throughout the Navy Enterprise. Because of a lack of awareness of DS processes and applications, other programs "re-invent" processes or develop similar applications, wasting funding, or continue modifying outdated or work intensive processes or applications in a shortsighted "rice-bowl" approach.
- 6) Not fully implementing planned DS design features or making erroneous assumptions about DS, increases risk to the success of new acquisitions, e.g., the DDG 1000. The DDG 1000 Class design had extensive Human Systems Integration (HSI) studies to account for every minute of each Sailor's tasking by billet. These studies were validated by testing and design models. At the same time, DDG 1000 designers made assumptions about what DS processes or applications would be available and needed to move workload ashore or reduce organic workload through automation for the HSI validated manning. In some cases these design assumptions were made based on an incomplete understanding of what DS would be able to provide, or on stated technology application capability that later failed to be realized. These designers assumed or were told that technology would be developed for DDG 1000 reducing cognitive and physical workloads of the crew using DS automation and simplification. However, possibly starting in the Engineering & Manufacturing Development (E&MD) phase, as funding

constraints were factored into the overall Navy budget, critical DS features were put on hold, cut or not available, e.g., Enterprise Remote Monitoring (eRM) and Navy Cash. In each case, further analysis of workload impact will have to be made in order to prevent overburdening of crew. For some applications, such as eRM, existing systems like the ICAS may work in a similar fashion without undue or adverse impact to the ship's workload, while others, like Navy Cash, do not have an immediate solution and are requiring development of a new application for use on DDG 1000 ships. While through great effort by the DDG 1000 PM's team to incorporate work-around processes and technology mitigates some of the risk, in the case of the DDG 1000, it shows how assumptions made early in acquisition stages about the transition of DS applications from Technology Readiness Level (TRL) 1 to TRL 9 is challenging. The lessons learned and critical to successful design is to have program acquisition professionals fully understand DS process and application maturity before making assumptions of a capability that may not be founded on firm understanding of the DS application TRL.

- 7) Budget constraints may force PMs to cut DS related expenditures in their program. PMs and others, both in programs and sponsor organizations may, without fully understanding the interdependencies of DS processes and technology as they relate to enabling DS MWA, curtail or cut the final development or implementation of capability needed to fully enable a DS process or application. Often these cuts are done for the right reason, such as cost over runs due to lack of software rigor by the contractor, budget cuts, etc., but the effect still reduces the overall platform DS capability.

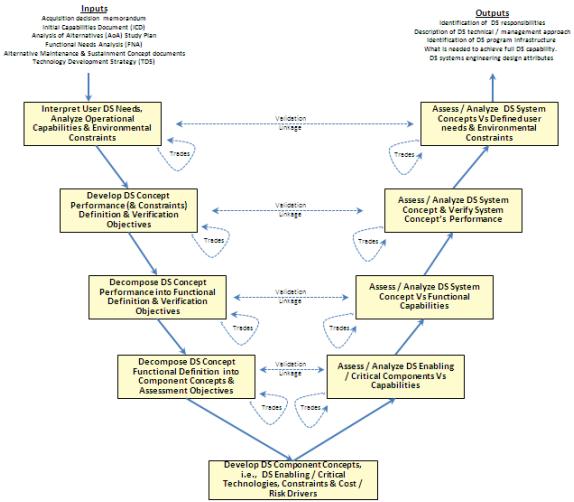


Figure 6 - Notional DS Systems Engineering Approach
(DS CRM, *Draft Acquisition Guide for Program Managers*)

Ensuring each program has a person assigned responsibility as DS Integrator may mitigate adverse impact on the program. This DS Integrator would understand and keep key program personnel informed of potential impact when modifications are made in one or more implementation area of a DS MWA process or application. At the very least, PMs should attempt to codify well understood ground rules and assumptions in the Technology Development (TD) phase and use a systems engineering (SE) approach (similar to Figure 6 above) to help understand ramifications for deleting DS. For example, if a platform design has included a robust capability to use sensor data that can be sent automatically off platform, allowing performance of predictive assessments for maintenance, or has fully networked DS dependent work applications required to push work off-platform and, through budget constraints, these capabilities are reduced or cut, it may adversely impact the platform's manning posture. This also may result in maintenance, admin and supply functional crew increases as off-platform data is no longer available automatically and requires human intervention to process.

All of these may have an unforeseen, but adverse affect on the crew after Initial Operational Capability (IOC). Sailors will strive in most cases to “make it work” regardless, but without initially planned DS enabling processes and applications, the Sailors often end up with significant “quality of life” impacts, as they work longer hours with less resources to keep meeting command mission requirements.

CONCLUSION

After nearly 10-years of DS growth and improvement, there seems to be connecting indicators that DS will result in R-TOC. In some cases cost saving have been identified, e.g., submarine business case analysis (BCA) described previously, and in other cases it is inferred based on increasing GDSC usage figures.

However, there remains significant room for further growth and improvement of DS implementation. The use of existing DS infrastructure, policies, applications and processes, combined with development of new DS procedures and processes will provide improved life cycle support to ships like the LCS and DDG 1000 Class ships and other new ship acquisitions. Viable, realistic and customer-focused DS will enable overall reduction of manning and logistics footprint to R-TOC. In many cases these DS improvements can be retro-fitted to serve legacy platforms.

Incorporating DS applications and processes for new acquisition and legacy ships and platforms cannot be a piecemeal process conducted by disparate organizations, each trying to field their latest application capability. Nor can PMs overlook the inter-dependencies of DS processes and applications, as they relate to manning, logistics support and quality of life. Using a System Engineering approach to DS in order to interpret the user needs, develop a viable and affordable solution, assess and test the solution E2E prior to delivery is critical to the continued success and to fully realize potential total ownership cost reductions due to DS implementation.

Recommendations / Way Ahead for Distance Support

- Conduct one or more business case analysis (BCA) to determine expected surface unit cost savings resulting from DS. Promulgate the resultant BCA information to the Navy acquisition community and acquisition sponsors.
- Fully integrate DS throughout acquisition phases to effectively use the technologies and processes employed through platform-to-platform, platform-to-shore and shore-to-shore relationships (Figure 7 below).
- Continue to apply rigorous business rules to processes used to minimize manpower and workload wherever possible.
- Treat DS processes and applications just as other key elements of the acquisition process.
- Update and embellish the Defense Acquisition University (DAU) curriculum with viable approaches to DS within the DoD acquisition process. Provide and require DS specific acquisition course-work for acquisition professionals.
- Establish and promote the concept of a Defense Acquisition Workforce Improvement Act (DAWIA) DS process, either stand-alone or incorporated throughout the acquisition communities.
- Ensure DS is implemented from a systems engineering approach, funded and tested as appropriate in each stage of the acquisition processes, i.e., included in a program Test and Evaluation Master Plan (TEMP) will help ensure a viable DS capability is delivered.
- Accelerate the consolidation of duplicate Help Desk and Call Centers under the single GDSC structure will provide immediate additional cost savings and streamline data collection for KM.

- Promote on-going academic studies of Navy DS from various business, logistics and technology perspectives at locations like the Naval Postgraduate School (NPS), and ensure widest dissemination of resulting thesis from these academic studies throughout the Navy Acquisition and DS communities.
- Map the DS value streams, beginning with the current process state of how work and information flow now, then drawing a leaner future state of how they should flow and creating an implementation plan with timetable would help refine the DS MWA processes for further cost savings.

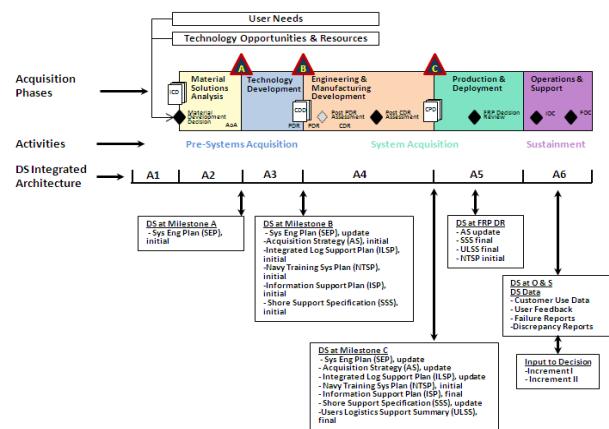


Figure 7 - DS in the Acquisition Process
(DS CRM, *Draft Acquisition Guide for Program Managers*)

Operationally-manned systems, platforms and ultimately shore-bases will require efficient routine business processes, using automation and technology when and where appropriate. DS currently provides enhanced capabilities in pay and personnel, logistics management, training, technical support, medical services and other reach-back capabilities. The efforts described above and others will in turn allow better realization of manning reductions, shore support logistics footprint reductions.

The DS CRM team has developed a comprehensive draft DS Acquisition Guide for Program Managers to use in all phases of the acquisition program. This guide details what DS should be considered prior to moving forward

with acquisition design phases and to ensure Acquisition Program Managers are aware and use existing CRM solutions vice re-inventing processes and applications. This guide has not yet been fully reviewed and accepted, nor has it been promulgated for use, but it is a very good first start on codifying and defining what steps are needed to fully incorporate viable distance support in an acquisition program and enable reduced Total Ownership Cost (TOC).

Acquisition Program Managers must analyze and integrate DS capabilities from the inception of system design through and beyond delivery to the greatest extent possible, providing real time assistance, logistics, maintenance and Manpower, Personnel, Training & Education (MPT&E) support to operational units.

The following paragraphs provide some of the possible DS recommendations for PMs to consider and use to update acquisition documentation and incorporate DS language into their processes.

ACQUISITION DOCUMENTATION LANGUAGE EXAMPLES

The authors offer the following examples of how documentation can be revised to better codify DS throughout the acquisition process. These examples were derived from the draft DS Acquisition Guide for Program Managers currently under development by the DS CRM team.

Acquisition Strategy (AS): The following language or similar language can be used to address DS in a program AS:

“Support Strategy: The _____ program support strategy provides for long-term, “cradle to grave” total life cycle support for all fielded weapons systems. Navy DS will be part of this strategy so that total ownership costs and logistics footprint considerations can be addressed early in the _____ program’s life. Communication will be established with the Navy Enterprise Help Desk/Global Distance Support Center. Program technical, support product and SME information will

be provided to the DS organization to facilitate effective, efficient Fleet customer service.”

Navy Training Systems Plan (NTSP): The following language or similar language can be used in the most suitable areas of the program’s NTSP Section 1.H CONCEPTS:

“The _____ program will utilize the Navy Global Distance Support Center (GDSC) Help Desk as the initial point of contact to respond to Fleet requests for manpower, personnel, training and education assistance. The _____ program In Service Engineering Agent (ISEA),
Code _____ will be identified in the GDSC Customer Relationship Management (CRM) database as the technical subject matter expert to respond to all Fleet operator and maintainer queries on the above topics.”

Integrated Logistics Support Plan (ILSP): The following language or similar language can be used to address DS in a program ILSP:

“The _____ program will utilize the Navy Global Distance Support Center (GDSC) Help Desk as the initial point of contact to respond to Fleet requests for sustainment support in the areas of supply support, training, maintenance and documentation. The _____ program In Service Engineering Agent (ISEA),
Code _____ will be identified in the GDSC Customer Relationship Management (CRM) database as the technical subject matter expert (SME) to respond to all Fleet operator and maintainer queries.”

Users Logistics Support Summary (ULSS): The following language or similar language can be used to address DS in a program ULSS:

“The _____ program will utilize the Navy Global Distance Support Center (GDSC) Help Desk as the initial point of contact to respond to Fleet requests for sustainment support in the areas of supply support, training, maintenance and documentation. The GDSC Phone number is _____; Email is _____. The _____ program In Service Engineering Agent (ISEA), _____, Code _____, Phone _____, Email _____ will be identified in the GDSC Customer Relationship Management (CRM) database

as the technical subject matter expert to respond to all Fleet operator and maintainer queries.”

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